

Add the following new claims:

14. Spinal osteosynthesis device comprising:
at least two bone-anchoring elements; and
means for longitudinally connecting the at least two
bone-anchoring elements;
each of the at least two bone-anchoring elements
comprising:
 a head shaped so as to allow grasping with a
 screwing tool;
 a threaded shank extending from the head, and
 a tightening element which can be fitted onto the
 threaded shank to immobilize an assembly
 comprising the means for longitudinally
 connecting and a corresponding one of said at
 least two bone-anchoring elements,
wherein the threaded shank has a ball end for
 articulation in a housing of a spherical cup of the
 head, allowing the shank to be selectively oriented
 with respect to the head, and wherein the ball is held
 in the housing by assembling the edge of the housing
 around the ball.

15. The device of claim 14, wherein the surface of the
 cup of the head is hemispherical and interrupted in a
 polar region to receive the ball.

16. Spinal osteosynthesis device comprising:
at least two bone-anchoring elements; and
means for longitudinally connecting the at least two
bone-anchoring elements;
each of the at least two bone-anchoring elements
comprising:
 a head shaped so as to allow grasping with a
 screwing tool;
 a threaded shank extending from the head, and
 a tightening element which can be fitted onto the
 threaded shank to immobilize an assembly
 comprising the means for longitudinally
 connecting and a corresponding one of said at
 least two bone-anchoring elements,
wherein the threaded shank has a ball end for
 articulation in a housing of a spherical cup of the
 head, allowing the shank to be selectively oriented
 with respect to the head, and wherein the threaded
 shank and the means for longitudinally connecting are
 equipped with means for immobilizing the shank and the
 ball in terms of rotation once the threaded shank has

been introduced into a corresponding through-hole through the means for longitudinally connecting.

17. Device according to claim 16, wherein the threaded shank comprises a first rotation-stopping geometry formed on a collar arranged between the ball and an opposite end of the threaded shank, and a second, female, rotation-stopping geometry is formed on an interior edge of the through-hole in the means for longitudinally connecting, this second rotation-stopping geometry being designed to press against the first rotation-stopping geometry once the means for longitudinally connecting has been fitted on the threaded shank.
18. Device according to claim 16, characterized in that an end of the threaded shank opposite the ball comprises a male shape designed to cooperate with a complementary female shape of a tool so as to allow immobilization of the ball in terms of rotation while the tightening element is being screwed onto the threaded shank.
19. Device according to claim 16, wherein the threaded shank has a narrowed portion delimiting two threaded regions of the shank, the narrowed portion constituting an initiator for breakage once the tightening element has been assembled and fitted on the means for longitudinally connecting, this narrowed portion therefore allowing the shank to be broken.
20. Device according to claim 16, wherein the threaded shank comprises two rotation-stopping geometries formed on a collar arranged between the ball and an opposite end of the threaded shank, and a two female rotation-stopping geometries are formed on an interior edge of the through-hole in the means for longitudinally connecting, the two rotation-stopping geometries of the through-hole being designed to press against the two rotation-stopping geometries of the threaded shank once the means for longitudinally connecting has been fitted on the threaded shank.
21. The spinal osteosynthesis device of claim 14, wherein the means for longitudinally connecting the at least two bone-anchoring elements comprises:
a shackle corresponding to each of the at least two bone-anchoring elements; and

a member that interconnects a plurality of the shackles.

22. The spinal osteosynthesis device of claim 14, wherein the means for longitudinally connecting the at least two bone-anchoring elements comprises:
a plate comprising a plurality of apertures, each of the apertures sized and shaped so as to allow engagement with a respective one of the bone-anchoring elements.

23. The spinal osteosynthesis device of claim 16, wherein the means for longitudinally connecting the at least two bone-anchoring elements comprises:
a shackle corresponding to each of the at least two bone-anchoring elements; and
a member that interconnects a plurality of the shackles.

24. The spinal osteosynthesis device of claim 16, wherein the means for longitudinally connecting the at least two bone-anchoring elements comprises:
a plate comprising a plurality of apertures, each of the apertures sized and shaped so as to allow engagement with a respective one of the bone-anchoring elements.

25. The spinal osteosynthesis device of claim 14, wherein the edge of the housing around the ball is crimped.

26. The spinal osteosyntheses device of claim 18, wherein each of the male end of the threaded shank and the complementary female end of the tool comprise a half-moon shape.

27. The spinal osteosyntheses device of claim 19, wherein the narrowed portion of the threaded shank comprises a rotation-stopping geometry.

28. The spinal osteosyntheses device of claim 27, wherein the end of the threaded shank opposite the ball comprises a male shape designed to cooperate with a complementary female shape of a tool so as to allow immobilization of the ball in terms of rotation, and wherein a cross-sectional shape of the male shape is the same as a cross-sectional shape of the narrowed portion of the threaded shank with the rotation-stopping geometry.